EPA Comments for State Consideration for the 2017 Triennial Revision of Regulation No. 2: ***Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas***

The following comments reflect EPA's recommendations for revisions to the latest version of Regulation No. 2 approved by the Arkansas Pollution Control and Ecology Commission (APCEC) on October 23, 2015. These recommendations also take into account the actions that EPA anticipates taking on the latest version of Regulation No. 2 that was submitted to the EPA for approval; the version of Regulation No. 2 that was approved by APCEC on February 28, 2014.

Regulation 2.104 – Policy for Compliance

1. In the 2014 triennial revision, the last sentence of the Policy for Compliance provision was revised to include the phrase "…unless the permittee is completing site specific criteria development or is under a plan approved by the Department, in accordance with Regulation 2.306, 2.308, and the State of Arkansas Continuing Planning Process." This new language effectively exempts permittees from the "compliance must occur at the earliest practicable time, but not to exceed three years from the effective date of the permit" limitation specified in the provision. This language could be interpreted to allow dischargers an unspecified amount of time to develop site specific criteria that would delay the effectiveness of the water quality-based effluent limit (WQBEL) that would otherwise apply under the currently applicable water quality standards (WQS). This approach appears to be inconsistent with EPA's policy that compliance schedules based on time to develop a site specific criterion are inconsistent with the Clean Water Act (CWA). Given this inconsistency, EPA is unable to act on the revised language. As a result, the revised language is not currently in effect for CWA purposes. EPA recommends that this new phrase be removed from the provision so that the standard is consistent with the EPA policy and can be approved.

Regulation 2.106 – Definitions

2. EPA currently recommends using *Escherichia coli* or enterococcus as the indicator for pathogens in surface water, as both are more effective indicators than fecal coliform. As Arkansas already has criteria for *E. coli* in its regulations, EPA recommends the removal of the fecal coliform criteria, along with the definition.

Regulation 2.202- High Quality Waters

3. On August 21, 2015, EPA published revisions to the federal WQS regulation at 40 CFR part 131. The revised regulation includes specific requirements for antidegradation policies and implementation methods at 40 CFR § 131.12. The revised federal regulation includes three new sections - the first (§ 131.12 (a)(2)(i)) clarifies how the state can designate Tier 2 protection for high quality waters, the second (§ 131.12(a)(2)(ii)) specifies that an alternatives analysis must be conducted before degradation is allowed, and the third (§ 131.12(b)) specifies that the state shall develop methods for implementation of the antidegradation policy.

   Section 131.12 (a)(2)(i) reaffirms that Tier 2 protection can be applied on a parameter-by-parameter basis or on a waterbody-by-waterbody basis. When a waterbody-by-waterbody

approach is taken, there must be an opportunity for public involvement in the decision process for assigning Tier 2 protections. This public involvement could occur in a number of ways, including the sharing of lists of Tier 2 waters during triennial reviews or revisions of antidegradation implementation methods, or engagement of the public while drafting a permit that could lower water quality. In addition, the federal regulation specifies that a waterbody cannot be excluded from Tier 2 protection solely because water quality does not exceed levels necessary to support all of the § 101(a)(2) uses. This cannot be the sole basis for not providing Tier 2 protection, however, the state may consider excluding that waterbody from Tier 2 protection after an overall assessment, including public participation, is conducted. An overall assessment would involve the state using all relevant data to conduct a holistic assessment of a water body to determine if it would receive Tier 2 protection. This assessment would take into account the public value of the water, its impact on public health and welfare, the existing designated uses, and the retention of ecosystem resilience. Factors that could be considered in the assessment could include aquatic assemblages, habitat, hydrology, geomorphic processes, landscape condition, and overall value and significance from an ecological and public use perspective. Further discussion and examples of an overall assessment can be found in the preamble to the proposed WQS regulation revisions rule: https://www.federalregister.gov/articles/2013/09/04/2013-21140/water-quality-standards-regulatory-clarifications

Section 131.12 (a)(2)(ii) specifies that an analysis of alternatives must be conducted before any lowering of water quality in high quality waters is allowed. This analysis must demonstrate that the lowering of the water quality is necessary for important economic or social development.

Section 131.12(b) specifies that the state shall develop implementation methods consistent with state's antidegradation policy and federal regulations. It also requires that the public have an opportunity for involvement during the development and revision process of these implementation methods and that the methods should be publically available.

Additional information about this regulation revision can be found in the following powerpoint: https://www.epa.gov/sites/production/files/2015-10/documents/wqsrule-antidegradation-presentation.pdf. The text of the regulation can be found on page 51048 of the Federal Register: https://www.gpo.gov/fdsys/pkg/FR-2015-08-21/pdf/2015-19821.pdf.

EPA recommends that the State update their antidegradation policy and implementation methods to be consistent with the new federal WQS revisions.

Regulation 2.302 – Designated Uses

4. To support the goal of source water protection, EPA encourages the State to consider revising the final sentence in the Domestic Water Supply use description found in Regulation 2.302 which states that "Conditioning or treatment may be necessary prior to use." The sentence could be revised in the following manner: "For public water supplies under this designation, conventional drinking water treatment for naturally occurring pollutants may be required prior to use. Protection efforts focused on man-made sources of pollution will be adequate to ensure that the

quality of source water will not be degraded such that additional treatment beyond that which is needed to address naturally occurring pollutant concentrations will be required prior to use."

5. To complement the description of public water supply use as discussed in comment #4, the State may also consider adding a definition of "source water" in the Domestic Water Supply use description or in the Definitions section at Regulation 2.106. The following is an acceptable definition of "source water" that the State may consider using: "Source Water - Water resources that are currently or may be used as a source of drinking water."

6. We recommend that the state consider developing tiered aquatic life uses that would identify water bodies that naturally are of higher or lower quality. With tiered aquatic life uses, the State will be able to more appropriately define which criteria should apply to streams and lakes with different natural watershed conditions and flow regimes. This may help relieve the need for determinations of many site specific criteria.

   A biological condition gradient (BCG) may be helpful for analyzing biotic communities' response to stressors in the environment and may help with defining the different tiers of aquatic life use. Addition information on the BCG can be found here: https://www.epa.gov/wqc/practitioners-guide-biological-condition-gradient-framework-describe-incremental-change-aquatic

Regulations 2.303 – Use Attainability Analysis

7. Part (B): In the 2014 WQS revision, a red comma was inadvertently retained from the proposed WQS, in the first line of this part.

Regulation 2.309 – Temporary Variance

8. The 2015 revisions to the federal WQS regulation at 40 CFR part 131 included clarifications for six key program areas, one of which is variances to WQS. Regulation 2.309 of the AR WQS for a temporary variance is generally consistent with EPA's definition of WQS variances, as used in national guidance and other documents, however we recommend that the state consider revising this section to more accurately reflect the new federal regulation. In particular, we recommend adding the requirements for public participation in the process, a stipulation that the variance applies for development of NPDES permit limits under § 301(b)(1)(c) and § 401 certification, and a requirement that a variance cannot be granted if the designated use and criterion can be achieved by implementing technology based limits. In addition, we recommend that the state identify the requirements for a variance submission which can be found at 40 CFR § 131.14(b), in this provision. Any new variance submission will be evaluated by EPA according to the 2015 federal WQS regulation revision.

   Within the requirements for variance submissions, there are many references to the highest attainable use/criteria. For clarity, the state may also want to add a definition of highest attainable use to Regulation 2.106. A suggested definition (from 40 CFR § 131.3(m)) for highest attainable

use is: “the modified aquatic life, wildlife, or recreation use that is both closest to the uses specified in section 101(a)(2) of the Act and attainable, based on the evaluation of the factor(s) in § 131.10(g) that preclude(s) attainment of the use and any other information or analyses that were used to evaluate attainability. There is no required highest attainable use where the State demonstrates the relevant use specified in section 101(a)(2) of the Act and subcategories of such a use are not attainable.” Additional information about the 2015 regulation revisions can be found at https://www.epa.gov/wqs-tech/final-rulemaking-update-national-water-quality-standards-regulation#information. A checklist for evaluating variance submissions can be found at https://www.epa.gov/sites/production/files/2016-03/documents/checklist-evaluating-discharger-specific.pdf.

Regulation 2.404 - Mixing Zones

9. EPA encourages the State to consider the addition of a sentence at the end of Regulation 2.404 which states that: “A mixing zone shall not include any public or private domestic water supply intake(s) or public water supply well(s) that have been determined by the State to be under the direct influence of surface water and connected to the mixing zone.” The Arkansas Department of Health and Human Services (ADHHS) is the State’s primacy agency for the drinking water program. The ADHHS has conducted scientific investigations on all public water supply wells that are suspected to be hydrologically connected to surface water and maintains an inventory of those wells. We recommend that the Arkansas Department of Environmental Quality (ADEQ) contact the ADHHS’s Division of Health - Engineering Section for locational data for these wells for use in establishing water quality standards and for delineating mixing zones.

10. Following the comment above, the State may wish to add a definition of “ground water under the direct influence of surface water” to Regulation 2.106. The following is an acceptable definition: “Ground Water Under the Direct Influence of surface water (GWUDI)- a phrase used to describe any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.” Public water supply wells that are determined to be GWUDI are often sited in close proximity to surface water bodies that are the subject of water quality standards. Since these wells are scientifically proven to be hydraulically connected to the surface waterbody, the quality of the surface water will have an acute influence on the quality of water produced by the well. For the purpose of protecting public health, such wells are treated the same as surface water sources under the Safe Drinking Water Act as amended in 1996. If these wells are used as a source of public drinking water supply, they should receive the same level of protection as provided for a surface water intake that is used as a public drinking water supply.

11. EPA encourages the State to consider adding language in the mixing zone regulation or in the State’s Continuing Planning Process (CPP) document which states that careful consideration will be given to the appropriateness of a mixing zone where a substance discharged is bioaccumulative, persistent, carcinogenic, mutagenic, or teratogenic. If such additional language

is included in the mixing zone regulation, the State may also wish to add a definition for bioaccumulation in Regulation 2.106. An acceptable definition for bioaccumulation could be: "the process by which a compound is taken up by an aquatic organism, both from water and through food."

Regulation 2.405 - Biological Integrity

12. The narrative biological criteria could be expanded to include specific language about aquatic community characteristics that are *quantifiable*. EPA encourages the State to include in the narrative provision or in their CPP document any references to methodology, whether general procedures or specific documentation (such as procedures for conducting and assessing biota community surveys, fish or macroinvertebrate index of biological integrity (IBI) applicable to the various ecoregions, etc.). Some references to sampling methodology and assessment are currently referenced in the CPP document, but this could be expanded to include the specifics of the metrics. EPA also recommends the development of a macroinvertebrate IBI calibrated for the species of the state to be used as a standardized assessment tool. Additional information is available in EPA's guidance *Biological Criteria: National Program Guidance for Surface Waters* (EPA 440/5-90-004; available at https://nepis.epa.gov/Exe/ZyPDF.cgi/00001OKG.PDF?Dockey=00001OKG.PDF).

13. EPA also suggests that the narrative biological criterion be expanded to emphasize protection of the most sensitive species and life stages in the aquatic community.

Regulation 2.502 – Temperature

14. The State may want to consider adding in a seasonal component to the temperature criteria, as the maximum limit appropriate for the summer months will not be appropriate for the winter months. Setting a winter maximum value will help ensure that aquatic life is protected throughout the year.

Regulation 2.503 - Turbidity

15. In the 2007 triennial revision, EPA disapproved the words "All Flows" for the turbidity and associated provisions. The use of the column heading "All Flows" modifies the application of the less stringent turbidity criteria in a way that is inconsistent with the way in which the criteria were originally derived. It may result in the potential misidentification of a waterbody in the State's CWA § 305(b)/303(d) assessment as supporting its applicable aquatic life designated use when it may actually be impaired due to turbidity. EPA recommends that the State revert to the previously approved "Storm Flow" column heading and provide an appropriate definition in 2.106.

Regulation 2.504 – pH

16. The current wording of the pH standard makes it is unclear what standard applies to lakes and also does not include a standard for reservoirs. The current language is "pH between 6.0 and 9.0

standard units are the applicable standards for streams. For lakes, the standards are applicable at 1.0 meter depth." EPA suggests expanding the first sentence and removing the second sentence so that the standards reads as "pH between 6.0 and 9.0 standard units are the applicable standards for streams, lakes, and reservoirs. ~~For lakes, the standards are applicable at 1.0 meter depth.~~" According to discussions between ADEQ and EPA, the intention of the phrase "standards are applicable at 1.0 meter depth" was to designate a standardized methodology of where sampling would occur for this parameter, not specify that the standard is only applicable at the one depth in the waterbody. EPA suggests that the state remove the sentence "For lakes, the standards are applicable at 1.0 meter depth." and include standardized sampling methodology in implementation documents.

Regulation 2.507 - Bacteria

17. From previous communications, ADEQ has stated that fecal coliform is used in developing effluent limits for permitted discharges. However, this is not clear in the bacteria provision. EPA suggests that the State include clarification concerning whether criteria for fecal coliform bacteria, *Escherichia coli*, or both, are used in developing effluent limits for permitted discharges.

    In addition, as data has shown that *E. coli* is a better indicator of pathogens than fecal coliform, it is recommended that bacteria levels be assessed using *E.coli,* or *enterococci,* rather than with fecal coliform. Studies have shown that there was not a significant relationship between fecal coliform and swimming-associated disease while the levels of *E.coli* and *enterococcus* were significantly related to gastrointestinal illness. EPA updated its methodology for evaluating *E.coli* in ambient and disinfected wastewaters in 2009. The methodology can be found here, https://www.epa.gov/sites/production/files/2015-08/documents/method_1603_2009.pdf. Given that this methodology is now available, and the relationship of *E. coli* and *enterococcus* to illness, we strongly recommended that either *E.coli* or *enterococcus* be utilized as the indicator of human fecal contamination for both the assessment and permitting programs.

18. In 2012, EPA published new recommendations for Recreational Water Quality Criteria (RWQC). These new criteria recommendations specify a magnitude, duration, and frequency of exceedance for the criteria. Previously in the 1986 criteria recommendation, a duration and frequency of exceedance was not explicitly stated. The 2012 RWQC recommends an explicit duration of 30 days for both the geometric mean (GM) and the statistical threshold value (STV) and an explicit frequency of zero excursions of the GM and less than 10% excursions of the STV over the 30 day duration. While the 30-day duration is considered the optimal time period, a duration up to 90-days is also considered acceptable. Analyses of the data showed that the 90-day and 30-day assessment periods were very similar in their determination of non-attainment, so either durations (or a value in-between) are considered acceptable for this criteria. In order to reflect the changes in the 2012 RWQC, EPA suggests that a few changes be made to the current bacteria regulation:

    i. Geometric mean values should be specified for all waters, not solely Extraordinary Resource Waters, Ecologically Sensitive Waterbodies, Natural and Scenic Waterways, reservoirs, and lakes. A geometric mean of 126 cfu/100ml or 100 cfu/100ml for *E. coli* is recommended.

ii. Fecal coliform criteria should be removed, and bacteria should be evaluated using *E. coli* or *enterococcus*
iii. Individual samples should be evaluated in a 30 day period (or up to 90 days, in a specified duration) using the STV and only a 10% exceedance rate of this value should be allowed.
iv. No exceedance of the GM value should be allowed.

More information about the 2012 RWQC can be found in the following FAQ: https://www.epa.gov/sites/production/files/2015-09/documents/npdes-water-quality-based-permit-limits-for-recreational-water-quality-criteria-faqs_0.pdf.

Regulation 2.508 - Toxic Substances

19. EPA recommends that Arkansas consider adopting the entirety of the EPA's § 304(a) list as an alternative to updating new substances as they are found in the State's TRI list or through other reporting systems. Adoption of the list would provide the State with the most up-to-date criteria and would help put in place criteria for harmful substances for the purpose of watershed protection. EPA would like to note that adoption of the entire § 304(a) list does not place a mandate that the state assess all parameters in each water body. However, if the state chooses not to adopt all the § 304(a) criteria recommendations the new 2015 federal WQS regulation revisions requires that the state provide a rationale for why it chose not to adopt those criteria.

20. Aquatic Life Criteria Table: EPA has issued revised aquatic life criteria under CWA § 304(a) as shown in the table below and recommends the adoption of updated values in the Arkansas water quality standards.

Parameter	Freshwater Criteria (ug/L)		Source
	Acute	Chronic	
Dieldrin	0.24	▪	1

Parameter	Freshwater Criteria (ug/L)		Source
	Acute	Chronic	
Endrin	0.086	▪	1
Cadmium (d)	$e^{(.9789[\ln(hardness)]-3.866)}$	$e^{(0.7977[\ln(hardness)]-3.909)}$	2
Chromium (III) (d)	$e^{(0.819[\ln(hardness)]+3.7256)}$	$e^{(0.819[\ln(hardness)]+0.6848)}$	1
Nickel (d)	$e^{(0.846[\ln(hardness)]+2.255)}$	$e^{(0.846[\ln(hardness)]+0.0584)}$	1
Silver (d)	$e^{(1.72[\ln(hardness)]-6.59)}$	▪	1
Zinc (d)	$e^{(0.8473[\ln(hardness)]+0.884)}$	$e^{(0.8473[\ln(hardness)]+0.884)}$	1

(d) dissolved

1. https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table
2. U.S. EPA. 2016. *Aquatic Life: Ambient Water Quality Criteria Cadmium.* Office of Water. EPA-820-R-16-002. Washington, D.C. 721 pages. https://www.epa.gov/sites/production/files/2016-03/documents/cadmium-final-report-2016.pdf

For the cadmium, chromium III, nickel, silver and zinc criteria, only the formula portion of the criteria needs to be updated. The conversion factor for these criteria in the current standards is consistent with § 304(a) recommendations.

21. In order to address concerns with chlorine toxicity to aquatic life, we recommend that the State develop and implement appropriate, numeric criteria for chlorine. The national recommended acute and chronic water quality criteria for chlorine are 19 ug/L and 11 ug/L, respectively (see EPA's current criteria recommendation table at: https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table).

22. EPA published freshwater aquatic life criteria for diazinon and nonylphenol in 2005. We recommend that the state consider adopting these criteria. Both the acute and chronic criteria recommendations for diazinon are 0.17 ug/L. EPA's acute and chronic criteria recommendations for nonylphenol are 28 ug/L and 6.6 ug/L, respectively. More information on both criteria recommendations can be found at the following websites. Diazinon: http://nepis.epa.gov/Exe/ZyPDF.cgi/901Q0K00.PDF?Dockey=901Q0K00.PDF, Nonylphenol: http://nepis.epa.gov/Exe/ZyPDF.cgi/P1004WZW.PDF?Dockey=P1004WZW.PDF,

23. EPA revised the freshwater aquatic life criteria recommendation for copper in 2007. EPA's recommended copper criteria is the use of the Biotic Ligand Model (BLM). EPA recommends adoption of these criteria in the Arkansas water quality standards. The BLM was developed using new data that became available after the development of the 1984 recommendation. The new

criteria utilizes a model that incorporates the characteristics of the receiving water body that can affect the toxicity of copper. Ten input parameters are included in the model in order to determine accurate criteria that are neither over nor under protective. In conjunction with the BLM, a draft missing parameters document is available which provides guidance on how to utilize the BLM if data on some of the input parameters are not available. The missing parameters technical support document utilized geostatistics and conductivity analyses, stream order, and information from the National Organic Carbon Database in order to estimate geochemical ions and dissolved organic carbon concentrations to be utilized in the BLM. This document can be found here: https://www.epa.gov/sites/production/files/2016-02/documents/draft-tsd-recommended-blm-parameters.pdf Additional information on the copper criteria can be found here: https://www.epa.gov/wqc/aquatic-life-criteria-copper#2007

24. For pH or hardness dependent criteria (e.g., ammonia, metals, pentachlorophenol), ideally pH or hardness data would be collected when samples to assess these criteria are collected. It is suggested that the State consider including language in its water quality standards (or in the State's § 305(b)/§ 303(d) assessment methodology documentation and CPP document) which provides for the use of site specific data, when available, to determine the receiving stream pH and/or hardness for use in implementing pH and hardness dependent criteria. This language should also specify that if adequate site specific data for pH and hardness are not available, then ecoregion pH and hardness values will be used to implement such criteria.

25. EPA encourages the State to consider development and documentation of procedures for assessing toxic pollutants for which water quality standards are not available. Data may be insufficient to develop standards, yet there is a need to assess the data for use support purposes. Such procedures should be documented in the standards or in separate documentation (e.g., the CPP document) and may be useful where there are concerns with emerging contaminants, newly developed pesticides or other toxic pollutants.

26. EPA has revised its § 304(a) criteria recommendation for selenium. The final freshwater chronic aquatic life criterion was released in 2016. The recommended criterion are found in the following table:

Chronic					Short-term
Egg-Ovary (mg/kg dw)	Whole Body (mg/kg dw)	Muscle (mg/Kg dw)	Water Lentic (µg/L)	Water Lotic (µg/L)	Water (µg/L)
15.1	8.5	11.3	1.5 (30 day)	3.1 (30 day)	Intermittent exposure equation

EPA recommends that the State consider adopting the new criterion. Additional information on the criterion can be found here: https://www.epa.gov/wqc/aquatic-life-criterion-selenium-documents.

Human Health:

In 2015, EPA published updates for the CWA § 304(a) human health criteria recommendations, based on the 2000 methodology (*Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*) and other information. The updated recommendations include: revised cancer slope factors (CSF) and reference doses (RfD); use of a relative source contribution (RSC) in criteria for non-carcinogens to account for other sources of exposure (e.g., food or air); use of bioaccumulation factors (BAFs) instead of bioconcentration factors (BCFs); and derivation of BAFs using aquatic trophic levels.

This methodology also includes updated exposure factors (body weight, drinking water consumption rates, and fish consumption rate). The updated defaults are an adult body weight of 80 kg, a drinking water consumption rate of 2.4 L/day, and a fish consumption rate of 22 g/day. EPA encourages states to determine their local fish consumption rate if possible as this number can vary widely by geography. A website maintained by the U.S. Department of Agriculture - Agricultural Research Service includes more recent studies on food consumption and several options for obtaining data (please see http://www.ars.usda.gov/main/main.htm). EPA recommends that ADEQ consider the national default value or results from other available studies for the calculation of updated human health criteria.

Information about the 2015 updates and the original 2000 methodology can be found at https://www.epa.gov/wqc/human-health-water-quality-criteria and https://www.gpo.gov/fdsys/pkg/FR-2015-06-29/pdf/2015-15912.pdf.
Summaries of the updated human health ambient water quality criteria and their related cancer slope factors, references doses, relative source contributions, and bioaccumulation factors can be found here: https://www.epa.gov/sites/production/files/2015-10/documents/comparison-of-epa-s-2015-final-updated-human-health-awqc-and-previous-awqc-june-2015.pdf and https://www.epa.gov/sites/production/files/2016-03/documents/summary_of_inputs_final_revised_3.24.16.pdf

Based on the updated criteria, EPA recommends that the State update their current human health criteria based on the revised Human Health Methodology and specify whether their criteria are for water consumption only or for water and organism consumption for the following substances in AR WQS:

Pollutant	Consumption of Water and Organism (µg/L)	Consumption of Organism Only (µg/L)
Dioxin (2,3,7,8 TCDD)	5.0×10^{-9}	5.1×10^{-9}
Chlordane	0.00031	0.00032
PCBs (polychlorinated biphenyls)	0.000064	0.000064
Alpha Hexachlorocyclohexane	0.00036	0.00039

Dieldrin	0.0000012	0.0000012
Toxaphene	0.00070	0.00071

27. In 2001, EPA published a fish tissue-based methylmercury criterion of 0.3 mg/kg for protection of human health. We recommend the adoption of this criterion in the Human Health Criteria Table in the Arkansas water quality standards. The criteria document is available at: https://www.epa.gov/wqc/human-health-criteria-methylmercury

28. EPA recommends that the State also update their water quality standards by adopting the full list of § 304(a) criteria for protection of human health. As noted above, EPA recommends that the human health criteria specify whether the criteria are for consumption of water and organisms or is only for the consumption of the organisms. If ADEQ is considering prioritizing the adoption of human health criteria, EPA recommends adoption of criteria for the following substances: 1, 2,-dichloroethane, antimony, barium, benzene, copper, ethylbenzene, manganese, mercury, nickel, nitrates, phenol, selenium, toluene, and zinc. These substances were reported in the 2014 Toxic Release Inventory as discharged to surface waters in Arkansas. The total amount discharged in the State is included in the attached Enclosure 2, along with information from EPA's Integrated Risk Information System (IRIS) database (available at: http://www.epa.gov/iris). EPA has published criteria under CWA § 304(a) for these substances, which can be found at https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table. For manganese, EPA's criteria recommendations are based on organoleptic effects rather than the reference doses found in IRIS. Also note that for copper, phenol, and zinc, EPA's organoleptic effect criterion is more stringent than the value for priority toxic pollutants. For mercury, see comment #27 above. The enclosed spreadsheet also identifies discharged substances for which a CSF or RfD is included in IRIS, but EPA has not published recommended criteria. The level of confidence in the CSF or RfD value for each substance is also provided in the spreadsheet.

Regulation 2.509 - Nutrients

29. EPA appreciates the current efforts that are being made by ADEQ in the development of nutrient criteria, in particular with the adoption of numeric criteria for Beaver Lake and the NSTEPS studies that have been completed by ADEQ. We encourage ADEQ to continue those efforts and keep moving towards additional numeric nutrient criteria for the surface waters of Arkansas.

Regulation 2.511 – Mineral Quality

30. EPA recommends the removal of site specific criteria for Smackover Creek "Unnamed trib A to Flat Creek from mouth of EDCC 001 ditch to confluence with Flat Creek" and "Confluence with unnamed trib A to Flat Creek" as these criteria were disapproved by EPA and are not in effect for CWA purposes.

31. EPA recommends the removal of the following site specific criteria for the Red River, "Red River from Arkansas/Oklahoma state line to mouth of the Little River" and "Red River from mouth of the Little River to the Arkansas/Louisiana State Line" as these criteria (TDS and Sulfates) were disapproved by EPA and not in effect for CWA purposes.

32. EPA acknowledges that ADEQ is currently working on developing a plan for the development of revised minerals criteria. While this process continues, EPA recommends that ADEQ remove the sentence "The values listed in the table below are not intended nor will these values be used by the Department to evaluate attainment of the water quality standards." This sentence has not been approved by the EPA as it would leave many water bodies without appropriate protection of aquatic life uses and it is not effective for the purposes of the CWA.

33. In 2008 EPA disapproved the removal of the following language from Regulation 2.511(A): "The following limits apply to the streams indicated, and represent concentrations of chloride (Cl^-), sulfate ($SO_4^=$) and total dissolved solids (TDS) not to be exceeded in more than one (1) in ten (10) samples collected over a period of not less than 30 days or more than 360 days." and the replacement of that language with the phrase "the monthly average." While the 2014 triennial removes the disapproved "the monthly average" phrase, it does not include the language that was approved in the previous version of Regulation No. 2 from April 23, 2004. EPA recommends placing this previously approved language back into Regulation No. 2, so that it reflects which regulations are currently effective for the CWA.

34. During recent discussions with ADEQ and contractors who regularly perform use attainability analyses (UAAs) for site specific criteria (SSC) modifications it appears that most SSC have been determined using mass balance models that use the Q7-10 flow. EPA recommends that it be specified in the standards that these criteria were developed using a background flow of Q7-10 so there is no confusion over which flow should be used for permitting. This could be done in a similar manner to the asterisk that designates those SSC that should be calculated using the 4 cfs flow or could be stated at the beginning of Section 2.511(A) before the list of streams.

Regulation 2.512 – Ammonia

35. EPA published a revised criteria document for ammonia in 2013. In updating the 1999 ammonia criteria recommendations, EPA conducted an extensive literature review that incorporated new toxicity data from 69 studies, including new data on freshwater mussels and gill-bearing snails, which are both sensitive to ammonia toxicity. In particular, freshwater mussels are more sensitive to ammonia than the organisms included in the dataset used in EPA's 1999 criteria document. Fourteen freshwater mussel species in AR are listed as threatened or endangered by the U.S. Fish and Wildlife Service. Therefore, EPA recommends the adoption of the § 304(a) numeric criteria for ammonia. Information about the new criteria can be found here: http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/ammonia/. Additional tools for implementation of the updated criteria are also available on the EPA website, including guidance

for flexibilities in the application of criteria in water bodies where sensitive mussel species are not present.

Appendix A

36. Within the Gulf Coastal Ecoregion – Specific Standards part of Appendix A, the following is stated: "Unnamed tributary of Lake June below Entergy Couch Plant to confluence with Lake June – maximum water temperature 95 degrees F (limitation of 5 degrees above natural temperature does not apply) (GC-1, #30)." EPA has disapproved the phrase "(limitation of 5 degrees above natural temperature does not apply)" and recommends that it is removed from the water quality standards as it is not effective for the purposes of the CWA.

37. Within the Gulf Coastal Ecoregion – Specific Standards part of Appendix A, the following is stated: "Red River from mouth of the Little River to the Arkansas/Louisiana state line, TDS 860 mg/L (GC-1, #55, 58)†." EPA has disapproved this criterion and recommends that it is removed from the water quality standards as it is not effective for the purposes of the CWA

38. Within the Gulf Coastal Ecoregion – Specific Standards part of Appendix A, the following is stated:

    Variations Supported by Technical Adjustment

    Red River from the Arkansas/Oklahoma state line to the mouth of the Little River, sulfate 250 mg/L, TDS 940 mg/L (GC-1, #57)†

    Red River from mouth of the Little River to the Arkansas/Louisiana state line, sulfate 225 mg/L (GC-1, #58)†

    EPA recommends the removal of this: "Variations Supported by Technical Adjustment" section, as the criteria contained within the section were not approved by EPA and are not effective for the purposes of the CWA.

39. Within the Gulf Coastal Ecoregion – Specific Standards part of Appendix A, the following is stated:

    "Unnamed tributary to Flat Creek from EDCC Outfall 001 d/s to confluence with unnamed tributary A to Flat Creek, Chloride 23 mg/L, Sulfate 125 mg/L, TDS 475 mg/L, (GC-2, #37)

    Unnamed tributary A to Flat Creek from mouth of EDCC 001 ditch to confluence with Flat Creek, Chloride 16 mg/L, Sulfate 80 mg/L, TDS 315 mg/L, (GC-2, #38)"

    These site specific criteria were disapproved by the EPA and the EPA recommends that they be removed from the water quality standards as they are not effective for the purposes of the CWA.

40. Within Appendix A the phrase "base/all" follows the row heading titled "Turbidity (NTU)." EPA recommends replacing the word "all" with the previously approved word "storm" as the word "all" was disapproved in the 11 instances where it is used in Appendix A and is not effective for the purposed of the CWA.

Additional Comments:

41. EPA recommends that in all places where it is specified that a criteria for a lake and reservoir is "applicable at 1.0 meter depth", that the "applicable at 1.0 meter depth" be removed, as this limits the protection of that criteria to that particular depth of the water column. According to discussions with ADEQ, the intention of the phrase "applicable at 1.0 meter depth" was to designate a standardized methodology of where sampling would occur for this parameter, not specify that the standard is only applicable at the one depth in the waterbody, however this wording in the standards makes it so that the criteria is only applicable at 1.0 meter depth rather than throughout the entire water column. EPA suggests that this phrase be removed from the standards and instead standardized sampling methodology be including in implementation documents.

42. EPA recommends that Arkansas take advantage of the triennial process to assess those streams lacking CWA § 101(a)(2) uses, as identified in Appendix A of Regulation No. 2. 40 CFR § 131.10(a) requires States to specify appropriate uses to be achieved and protected, while 40 CFR 131.20(a) states that waterbodies without § 101(a)(2) uses be re-examined every three years to see if new information is available to support their achievement of such uses. Coffee Creek and Mossy Lake, which have been shown by a UAA to support § 101(a)(2) uses, are prime examples of waterbodies meeting such obligations. As outlined in EPA's letter of March 6, 2009, there are several options for ADEQ to address this situation. We strongly recommend that ADEQ address these concerns within the triennial timeframe. EPA must continue to assume that uses specified in § 101(a)(2) of the Act are attainable. In instances such as these, Region 6 may recommend that the EPA Administrator make a finding under CWA §303(c)(4)(B), which may result in federal action.

43. EPA recommends that a frequency and duration component be added to the temperature criteria, toxics criteria and site specific criteria. EPA also recommends that frequency and duration be added to the dissolved oxygen criteria, which are currently included only for the critical season. EPA guidance recommends that an aquatic life criteria contain three components, magnitude, duration, and frequency, so that a criteria is appropriately protective. Adding these missing components to the listed criteria will improve the protection of designated uses in Arkansas waters.

44. The State is encouraged to revise its CPP document to make it consistent with the current version of Regulation No. 2. Consistency between these two documents will ensure that WQS are implemented as intended.

Discussions with ADEQ have indicated that the goal of the next triennial revision is to revise Regulation No. 2 to reflect what has been approved by EPA for the purposes of the CWA. Given this, EPA recommends prioritizing revisions based on the list of comments below. These comments indicate where Regulation No.2 varies from what has been approved by EPA. This list of comments also reflects the actions that EPA anticipates taking on the 2014 triennial revision of Regulation No. 2 that was adopted by APCEC on February 28, 2014. Changes that were already made during the 2014 triennial revision process are not listed here.

- Comment #1 regarding compliance schedules.
- Comment #15 regarding the turbidity provision.
- Comments #16 and #41 regarding the application of several standards at 1.0 meter depth in lakes and reservoirs.
- Comment #30 regarding site specific criteria for Smackover Creek.
- Comment #31 regarding site specific criteria for the Red River.
- Comment #32 regarding ecoregion minerals criteria.
- Comment #33 regarding ecoregion minerals criteria
- Comment #36 regarding Lake June temperature criteria.
- Comment #37 regarding Red River site specific criteria in Appendix A.
- Comment #38 regarding Red River site specific criteria in Appendix A.
- Comment #39 regarding Flat Creek site specific criteria in Appendix A.
- Comment #40 regarding the use of “all” flows in Appendix A.